Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A direct pool cooling type passive safety grade decay heat removal method for a liquid metal reactor,

wherein the liquid level difference between a hot pool defined above a core and inside a reactor baffle and a cold pool defined between the reactor baffle and the inner wall of a reactor vessel is maintained by a primary pumping head under normal steady-state conditions, the interior of the reactor vessel being partitioned into the hot pool and the cold pool by the reactor baffle,

wherein a sodium-sodium heat exchanger connected to a sodium-air heat exchanger mounted above a reactor building via a heat removing sodium loop is disposed at a position higher than a liquid level of the sodium in the cold pool under normal steady-state conditions, ~~and~~

wherein the liquid level of sodium in the cold pool rises so that the liquid level difference between the hot pool and the cold pool is eliminated when the primary pump is automatically tripped due to a failure of a normal heat removal system, and the sodium in the hot pool is expanded due to core decay heat so that the sodium in the hot pool overflows into the cold pool to form natural circulation flow paths between the hot pool and the cold pool, whereby the sodium-sodium heat exchanger makes direct contact with hot sodium so that the core decay heat is discharged into a final heat sink, the

atmosphere, wherein at least one circular vertical tube is disposed in the hot pool inside the reactor baffle, the circular vertical tube has the lower end communicating with the cold pool so that the sodium in the circular vertical tube has the same liquid level as the liquid level of the sodium in the cold pool, and the upper end extended upward to the extent that it is placed at the position higher than a liquid level of the sodium in the hot pool under the normal steady-state conditions,

wherein the sodium-sodium heat exchanger is disposed in the circular vertical tube while it is placed at the position higher than the liquid level of the sodium in the cold pool under the normal steady-state conditions,

wherein heat transfer only by thermal radiation is performed between the inner circumference of the circular vertical tube and the sodium-sodium heat exchanger under the normal steady-state conditions so that solidification of the sodium in the heat removing sodium loop is prevented, and wherein the heat transfer by thermal radiation is quantitatively controlled by adjusting surface emissivity of the sodium-sodium heat exchanger and the circular vertical tube to minimize heat loss under the normal steady-state conditions so that the minimum amount of heat necessary to prevent solidification of the sodium is supplied to the heat removing sodium loop

2. (previously presented) The method as set forth in claim 1, wherein the reactor vessel is also cooled by using a passive vessel cooling system.

3. (canceled).

4. (currently amended) The method as set forth in claim ~~3~~ 1, wherein the core decay heat is removed by the combination of

the heat removing sodium loop and the sodium-air heat exchanger on the basis of a completely passive concept without the provision of dampers disposed in an air inlet and an air outlet of the sodium-air heat exchanger and isolation valves mounted in the heat removing sodium loop.

5-8. (canceled).

9. (currently amended) The method as set forth in claim 1, wherein the sodium-sodium heat exchanger comprises a U-shaped heat transmitting unit comprising a cold sodium downcomer having an ~~upper~~ end connected to a cold leg of the heat removing sodium loop, a plurality of heat transmitting tubes surrounding an outer circumference of the cold sodium downcomer, and a heated sodium collector for collecting the sodium in the sodium-sodium heat exchanger absorbing the heat from the sodium as it moves upward through the heat transmitting tubes.